UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,040	06/28/2005	Hirokazu Hanaki	SON-2905	1974

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EXAMINER
CONNOLLY, MARK A

ART UNIT	PAPER NUMBER
2115	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/541,040	HANAKI, HIROKAZU
	Examiner	Art Unit
	Mark Connolly	2115

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>28 June 2005</u>.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-9</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-9</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>28 June 2005</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☒ All   b) ☐ Some *   c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date <u>6/28/05</u>.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-9 have been presented for examination.

Information Disclosure Statement

2.   Reference AA to Shibazaki was crossed off as not being in conformance. In particular,

the patent number listed was incorrect. Recognizing this, the examiner has considered what is

believed to be the Shibazaki reference and has listed it the PTO-892 supplied with this office

action.

Specification

3.   The disclosure is objected to because of the following informalities:

In particular, the DISCLOSURE OF THE INVENTION recites having a *random* gap

between clock pulses when a bus busy signal does not indicate a bus busy state. The size of this

gap is defined by a count value stored in setting register 21, which is set in advance according to

an interrupt factor. Because the gap size is defined, it is not *random*.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

5.   Claims 1 and 4-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the enablement requirement. The claim(s) contains subject matter which was not described

in the specification in such a way as to enable one skilled in the art to which it pertains, or with

which it is most nearly connected, to make and/or use the invention.

In particular, the claims recite having a *random* gap between clock pulses when a bus

busy signal does not indicate a bus busy state. The size of this gap is defined by a count value

stored in setting register 21, which is set in advance according to an interrupt factor. For

examination purposes, because the gap size is defined, it is not interpreted as being *random*.

Claim Objections

6.   Claims 2 and 7 are objected to and should be clarified as follows:

For examination purposes, claim 2 has been interpreted as "... wherein in the case where

an interrupt signal based on one of a plurality of interrupt factors is supplied to the

microprocessor, pulse number control data that is set in advance corresponding to the supplied

interrupt factor..."

For examination purposes, claim 7 has been interpreted as "...setting pulse number

control data that is set in advance corresponding to interrupt factors..."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
sale in this country, more than one year prior to the date of application for patent in the United States.

8.   Claims 1, 3-6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim US

Pat No 5898879.

9.   Referring to claim 1, Kim teaches the invention including:

    a.   A clock control device which controls the number of pulses of an operation clock

to a microprocessor at least based on whether or not there is a bus busy signal indicating

a bus busy state from said microprocessor [abstract and col. 1 lines 10-15].

    b.   clock control means which supplies the microprocessor with a system clock while

the bus busy signal is existing and which supplies the microprocessor with a clock having

a reduced number of pulses of the system clock while said bus busy signal is not existing,

respectively as an operation clock [col. 2 lines 55-67].

10.   Referring to claim 3, Kim teaches reducing a processor clock to a predetermined value

based on whether the system is to enter a lower power mode or if an I/O device is to utilize the

bus [col. 1 lines 27-30 and 46-56 and col. 1 line 66-col. 2 line 10]. Indicating a lower power

mode or that another I/O device is to utilize the bus is interpreted as being performed by

interrupts since interrupts are triggered when a systems current operation is to be interrupted.

Because Kim teaches reducing the clock to the processor by a preset value (e.g. ½, ¼ or to a

value below a certain threshold), the clock value is interpreted as being set in advance.

11.   Referring to claims 4-6 and 8 these are rejected on the same basis as set forth

hereinabove. Kim teaches the device and therefore teaches the method performed by the device.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13.   Claims 2, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim as applied to claims 1, 3-6 and 8 above, and further in view of Tanenbaum, STRUCTURED COMPUTER ORGANIZATION.

14.   Referring to claim 2, although Kim teaches the system and method for controlling a clock supplied to a processor based on an identified interrupt factor, it is not explicitly taught that this can be performed via software. Rather, Kim suggests the above being performed using a bus controller [col. 2 lines 1-10 and 40-48]. In summary, Kim teaches the system for adjusting a clock being supplied to a processor based on one of a plurality of instances which include, entering a doze, standby or suspend mode or when another device requests usage of the bus. Each of the instances adjust the clock in a separate but distinctive manner such as reducing the clock to ½ or ¼ its speed or setting the clock speed below a certain threshold as stated above. Since the Bus controller explicitly controls the clock speed to the processor, it is interpreted that the bus controller identifies and distinguishes between each separate instance (i.e. interpreted as receiving and distinguishing between different interrupts as stated above) and sends an adjustment signal to the clock generator accordingly. Tanenbaum explicitly teaches "hardware and software are logically equivalent" [page 11]. In particular, Tanenbaum teaches that anything done in hardware can also be performed through software. Therefore, it would have been obvious to modify the Kim system to identify the different instances (i.e. distinguish between the different interrupts) through software because it would reduce the cost and complexity of the bus controller in that it would no longer have to include hardware for identifying the different interrupts. Because the Kim-Tanenbaum system identifies the interrupts through software, and because the processor executes software, it is obvious that the processor would receive the interrupt signals. Then, the software executing on the processor would identify the type of

interrupt and send a corresponding clock control signal (i.e. pulse number control data) to the bus

controller/clock generator (i.e. clock control means) for controlling the clock supplied to the

processor.

15.   Referring to claims 7 and 9, these are rejected on the same basis as set forth hereinabove.

Conclusion

16.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Mark Connolly whose telephone number is (571) 272-3666. The

examiner can normally be reached on M-F 8AM-5PM (except every first Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Thomas C. Lee can be reached on (571) 272-3667. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark Connolly
Examiner
Art Unit 2115

mc
February 15, 2007